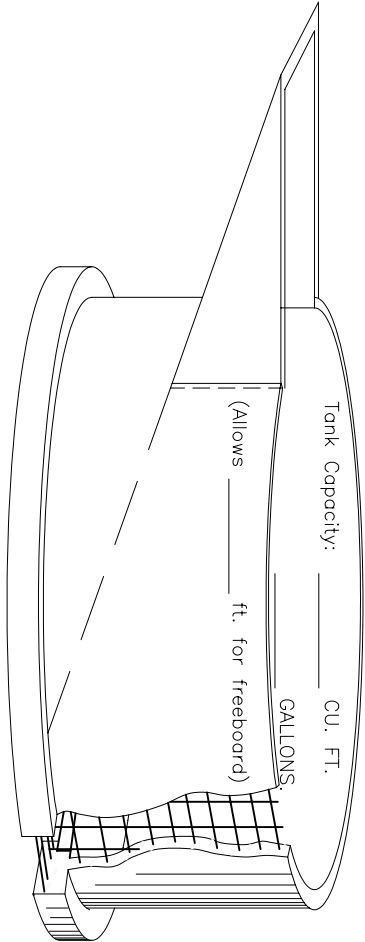


The design is in accordance with strength design requirements detailed in ACI 318—05.



### CIRCULAR CONCRETE MANURE TANK

#### DESIGN LOADING:

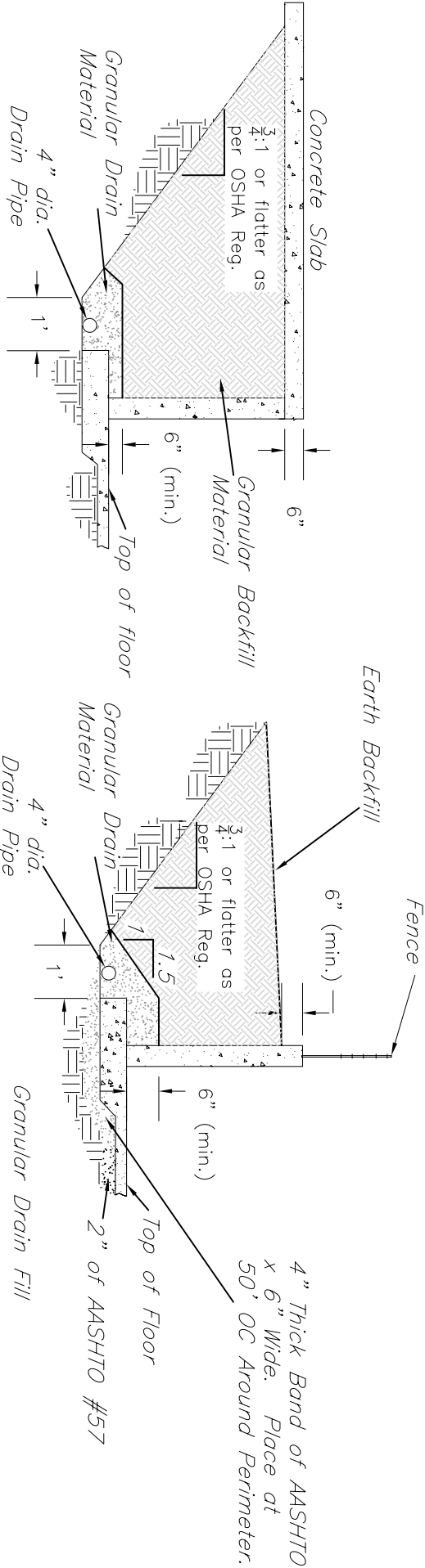
1. Manure load: 65 psf/ft of depth with a Factor of Safety = 1.2.
2. Soil back fill loads: Equivalent Fluid Pressure 45 psf/ft of depth with no surcharge and a F.S. = 1.6. This requires the structure to be backfilled for adequate drainage. See wall backfill details for fill material and placement requirements necessary to meet wall loading conditions.
3. Supplemental design and calculations performed by TeamAG January 9, 2008.

#### CONSTRUCTION NOTES:

1. All reinforcing steel shall have a yield point of  $f_y = 60,000$  psi
2. For splice lengths, refer to the table on Sheet 2. All bends in reinforcing steel shall have a minimum radius of 3 bar diameters.
3. All concrete shall have a minimum 28 day compressive strength of 4,000 psi. The mix design shall be submitted to NRCS prior to placement.
4. Construction joints may be used to facilitate construction. The location of construction joints shall be approved by the Engineer prior to placing the concrete. See Sheet 2.
5. Refer to manufacturer's recommendation for placing water stop material.
6. Backfill shall be brought up uniformly around the tank. The maximum difference in the finished back fill elevations around the tank shall be 4 feet.
7. All construction methods shall meet OSHA regulations.
8. Foundations (footings) shall extend to below frost depth or otherwise be protected from frost heaving or freezing as approved by the engineer.
9. Installation of this structure shall conform to NRCS Construction Specifications 313S, 606.

#### SAFETY ITEMS:

1. The tank shall be surrounded by a chain link or woven wire fence with a minimum height of 5'.
2. Posts shall be cast into the concrete wall or attached to wall with appropriate anchors. Post shall be capped.
3. Safety stops shall be installed at pushoff locations to prevent accidental entry of equipment, people and animals.
4. Warning signs shall be erected around the tank stating that entry may result in injury or death.



### WALL BACKFILL DETAIL - UNLOADING

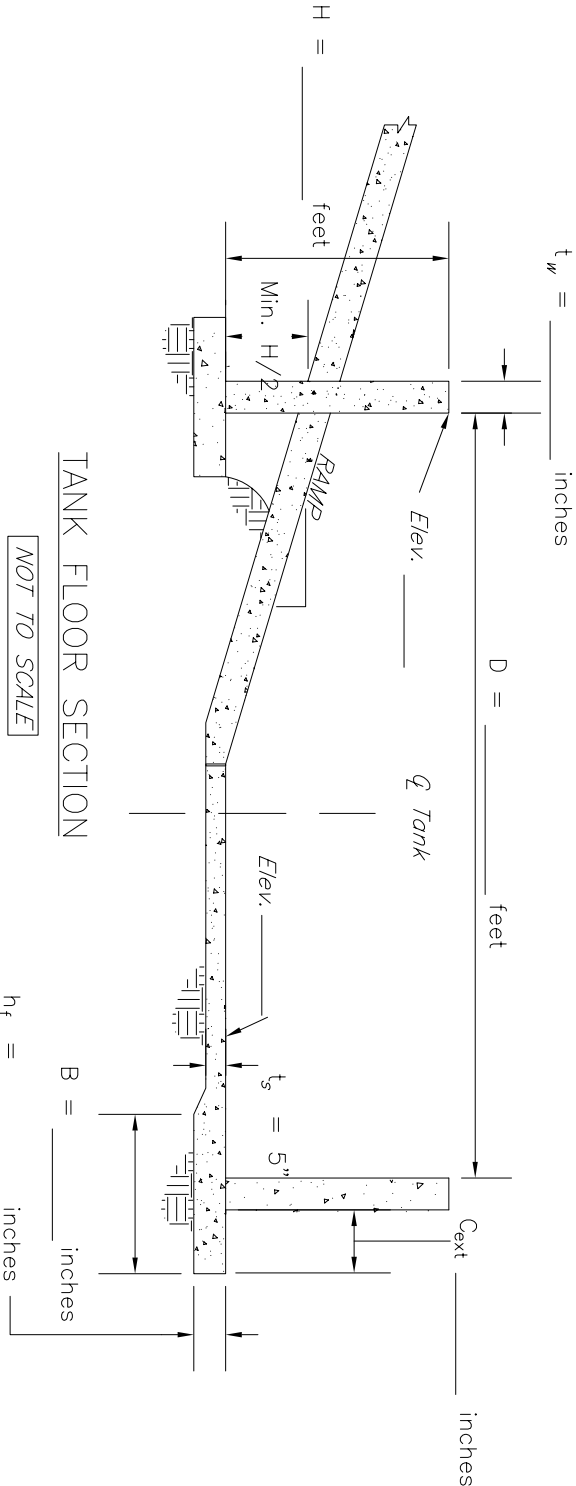
#### STATION

Loaded manure trucks & tankers shall stay a distance of 3X tank depth away from the outside of the ramp sidewalls.

If tractors, heavy tank wagons, or trucks will be driven next to the tank, cast a 6 inch thick, reinforced concrete slab along the traffic route adjacent to and supported by the tank. The concrete slab should be large enough to eliminate any wheel loads directly on the natural ground or back fill by the tank. The purpose of the slab is to distribute the loading along the tank wall and prevent mud and erosion. The concrete slab shall have T&S reinforcement equivalent to No. 3 bars at 18 inches C-C (steel shall be placed at or above the mid-depth of the slab). Granular back fill is required under slab and shall be compacted in uniform 8-inch lifts with a minimum of 3 passes with a manually directed vibratory roller or plate vibrator. Granular backfill shall be GP, GW, SP, SW, GM, GC or equal.

### WALL BACKFILL DETAIL - TYPICAL

1. Provide a minimum 4-inch diameter perforated perimeter drain pipe for wall back fill drainage. Outlet the pipe at a location downstream where flow from the outlet may be monitored, 50' from any stream.
2. Suitable pipe materials include PVC, CPT, or as otherwise approved by the engineer.
3. If a high water table is present, a special drain system will be required under the tank floor to prevent uplift.
4. To provide adequate drainage, the granular drain fill shall be clean with maximum 5 percent fines. The maximum particle size shall be 1.5 inches.
5. Place and compact backfill in uniform 12 inch lifts. Compact with a minimum of two passes of manually directed power tamper over entire surface area for each lift.



### TANK FLOOR SECTION

NOT TO SCALE



COUNTY, PENNSYLVANIA  
ROUND TANK W/RAMP DETAIL

Revisions	<u>Latshaw</u>
Revisions	<u>Pereverzoff</u>
Redrawn	<u>Hartz</u>

Date	<u>1/31/02</u>
	<u>1/9/08</u>
	<u>2/1/08</u>

Designed	<u>PA NRCS</u>
Drawn	<u>Latshaw/Schaetzle</u>
Checked	
Approved by	

Date	<u>12/01</u>
	<u>1/31/02</u>